Remarks

The RCE submission mailed July 8, 2002 included claim amendments and an IDS, both of which by themselves satisfy the submission requirement for an RCE. Accordingly, the requirements for the RCE mailed July 8, 2002 are believed to have been satisfied. The present amendment provides a clean copy of the claims

Respectfully submitted,

July 15, 2002

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Version Showing Amendments

1. (Amended) [A] An optical element holding device for a first optical element, comprising:

a first holding [portion] member communicated with an outer edge portion of the first optical element to hold the first optical element;

a connecting [portion] member connected to the first holding [portion] member; and

a drive mechanism provided in the connecting [portion] member to move the first optical element [by relatively moving the first holding portion and the connecting portion].

2. (Amended) The optical element holding device according to claim 1, further comprising a second holding [portion] member provided in the connecting [portion] member to hold a second optical element.

3. (Amended) The optical element holding device according to claim 1, further comprising a measuring device disposed between the first holding [portion] member and the connecting [portion] member to measure the movement of the first optical element.

4. (Amended) The optical element holding device according to claim 3, further comprising:

a second holding [portion] member provided in the connecting [portion] member to hold a second optical element; and

a heat insulation element located between the measuring device and at least one of the first and the second optical elements.

5. (Amended) The optical element holding device according to claim 3, wherein the measuring device measures an amount of displacement of the first

holding [portion] member with respect to the connecting [portion] member, and wherein the movement of the first optical element is determined based on the measured displacement.

6. (Amended) The optical element holding device according to claim 5, wherein the measuring device includes an optical encoder having a measured portion fixed to the first holding [portion] member and a measuring head fixed to the connecting [portion] member.

7. (Amended) The optical element holding device according to claim 3, wherein the connecting [portion] member is annular having a peripheral surface, and wherein the drive mechanism is one of at least three equally spaced drive mechanisms arranged along the peripheral surface of the connecting [portion] member.

8. (Amended) The optical element holding device according to claim 7, wherein the measuring device is one of at least three equally spaced measuring devices arranged along the peripheral surface of the connecting [portion] member, and each of the measuring devices is located midway between two of the drive mechanisms that are adjacent.

9. (Amended) The optical element holding device according to claim 1, wherein the connecting [portion] member is annular having a peripheral surface, wherein the drive mechanism includes an actuator that moves in a predetermined direction, wherein the actuator is arranged in the connecting [portion] member such that the displacement of the actuator is tangential to the connecting [portion] member.

10. (Amended) The optical element holding device according to claim 9, further comprising a rotating pivot mechanism located between the actuator and the

connecting [portion] member.

11. (Amended) The optical element holding device according to claim 9, wherein the rotating pivot mechanism includes a cutaway spring formed in the connecting [portion] member and defined by cuttings intersect the optical axis of the first optical element.

12. (Amended) The optical element holding device according to claim 9, wherein the connecting [portion] member includes a cutaway portion having an opening in which the actuator is accommodated.

14. (Amended) The optical element holding device according to claim 1, wherein the drive mechanism comprises:

an actuator provided on the connecting [portion] member, wherein the actuator displaces in a predetermined direction;

a first link mechanism connected to the actuator, the connecting [portion] member and the first holding [portion] member, to transfer the displacement of the actuator to the first holding [portion] member; and

a second link mechanism, connected to the connecting [portion] member and the first holding [portion] member, to guide relative movement of the first holding [portion] member with respect to the connecting [portion] member in a predetermined direction.

17. (Amended) The optical element holding device according to claim 16, wherein the displacement increasing mechanism includes a cutaway spring formed in the connecting [portion] member and defined by cuttings intersect the optical axis of the first optical element.

19. (Amended) The optical element holding device according to claim 14, wherein when the displacement of the actuator is transferred to the first holding

[portion] member by the first link mechanism, the second link mechanism guides the first holding [portion] member in a predetermined direction in cooperation with the first link mechanism.

21. (Amended) The optical element holding device according to claim 19, wherein the connecting [portion] member has an upper end, a lower end and a mounting surface form on [an imaginary plane including] at least one of the upper end and the lower end and extending to cross the optical axis, and wherein when a plurality of optical element holding devices are stacked along the optical axis, the mounting surface is opposed to [an] a mounting surface of the adjacent optical element holding device.

22. (Amended) The optical element holding device according to claim 19, wherein the second link mechanism guides the first holding [portion] member such that the position of the optical element matches an optical pivotal position of the optical element.

23. (Amended) The optical element holding device according to claim 1, further comprising a return mechanism connected to the first holding [portion] member to return the first holding [portion] member to its original position.

24. (Amended) The optical element holding device according to claim 1, wherein the first holding [portion] member has an inner ring [portion] to which the outer edge portion of the first optical element is fixed, and the connecting [portion] member has an outer ring [portion] having a mounting portion to which an outer ring [portion] of another optical element holding device is mounted, wherein the drive mechanism, includes an actuator provided on the outer ring [portion] to connect the inner ring [portion] and the outer ring [portion].

25. (Amended) The optical element holding device according to claim 24,

wherein the outer ring [portion] has a cylindrical wall having an opening, wherein the actuator is located in the opening.

26. (Amended) The optical element holding device according to claim 24, wherein the drive mechanism includes a first link mechanism and a second link mechanism, and wherein the first link mechanism and the second link mechanism are formed in the cylindrical wall of the outer ring [portion], and wherein the first link mechanism is connected to the inner ring [portion] and transfers displacement of the actuator to the inner ring [portion], and the second link mechanism is connected to the inner ring [portion] and guides the inner ring [portion] to a predetermined direction in cooperation with the first link mechanism when displacement of the actuator is transferred to the inner ring [portion].

27. (Amended) The optical element holding device according to claim 24, wherein the outer ring [portion] has two ends, and wherein the mounting portion is provided in at least one of the ends of the outer ring [portion].

28. (Amended) The optical element holding device according to claim 24, further comprising:

a measuring device disposed between the inner ring [portion] and the outer ring [portion] to measure the relative movement of the inner ring [portion] with respect to the outer ring [portion], wherein the outer ring [portion] has [an] a peripheral wall having an opening, wherein the measuring device includes a measured portion provided on the inner ring [portion] and a measuring head located in the opening to measure a displacement of the measured portion, wherein a measured displacement of the measured portion is readable by the measuring head through the opening.

29. (Amended) A barrel structure accommodating a plurality of optical elements, comprising:

an optical element holding device which holds at least one of the optical elements, wherein the optical element holding device includes:

a holding [portion] member communicated with an outer edge portion of one of the optical elements to hold the optical element;

a connecting [portion] member connected to the holding [portion] member; and

a drive mechanism provided in the connecting [portion] member to move the optical element [by relatively moving the holding portion and the connecting portion].

30. (Amended) An exposure apparatus for transferring a pattern image formed on a mask onto a substrate using exposure light beam, comprising:

a projecting optical system having at least one barrel module, wherein the barrel module includes:

[a] an optical element located on the path of the exposure light beam;

[a] an optical element holding [portion] member communicated with an outer edge portion of the optical element to hold the optical element;

a connecting [portion] member connected to the holding [portion] member; and

a drive mechanism provided in the connecting [portion for moving] member to move the optical element [by relatively moving the holding portion and the connecting portion].

31. (Amended) A method for making a semiconductor device using an exposure apparatus that transfers a circuit pattern image formed on a mask through a projection optical system onto a substrate using exposure light beam, the method comprising:

applying a photo sensitive agent on a workpiece;

exposing the circuit pattern image to the workpiece using the exposure

apparatus, wherein the exposure apparatus includes at least one barrel modules, wherein each of the barrel modules includes:

[a] an optical element located on the path of the exposure light beam;

[a] an optical element holding [portion] member communicated with an outer edge portion of the optical element to hold the optical element;

a connection [portion] member connected to the holding [portion] member; and

a drive mechanism provided in the connecting [portion] member to move the optical element [by relatively moving the holding portion with respect to the connecting portion];

wherein the exposing step includes adjusting [a] an image formation property of the projection optical system by moving the optical element;

developing the exposed workpiece, wherein the photo sensitive agent forms a resist corresponding to the circuit pattern on the workpiece by the developing;

etching [a] an exposed region except for the resist; and

removing the resist from the workpiece.

33. (Amended) An optical element holding device comprising:

a ring body accommodating an optical element, wherein the ring body includes:

an inner ring [portion] communicated with a peripheral edge portion of the optical element to hold the optical element; and

an outer ring [portion uniformly] monolithically formed with the inner ring [portion]; and

a drive mechanism provided in the ring body to move the inner ring [portion by relatively moving the inner ring portion and the outer ring portion], wherein the drive mechanism includes:

an actuator provided on the ring body, wherein the actuator displaces in a predetermined direction;

a displacement increasing mechanism formed in the outer ring [portion]; and

a guide mechanism formed in the outer ring [portion] and connected to the displacement increasing mechanism and the inner ring [portion], wherein the guide mechanism transfers displacement of the actuator to the inner ring and converts the displacement of the actuator in a direction substantially along the optical axis of the optical element.

34. (Amended) The optical element holding device according to claim 33, wherein the outer ring [portion] has an outer wall and an inner wall, wherein the displacement increasing mechanism includes a plurality of slits and a plurality of through holes, wherein each of the slits and the through holes extends between the outer wall and the inner wall in an imaginary plane including the optical axis.

35. (Amended) The optical element holding device according to claim 33, wherein the outer ring [portion] has an outer wall and an inside wall, and the guide mechanism includes a parallel link mechanism defined by a plurality of slits and a plurality of through holes, each of the slits and the through holes extending between the outer wall and the inside wall in an imaginary plane including the optical axis.